

WHAT IS CLAIMED IS:

1. A method for determining the influencing of the state of polarization of optical radiation by an optical system under test, in which
 - entrance-side radiation with a defined entrance state of polarization is directed onto the optical system,
 - the exit state of polarization is measured by radiation emerging from the optical system, and
 - the influencing of the state of polarization by the optical system is determined by means of evaluating the measured exit state of polarization with reference to the entrance state of polarization,wherein
 - the influencing of the state of polarization caused by an optical imaging system of prescribable aperture is determined with pupil resolution.
2. A method according to Claim 1, wherein the defined entrance state of polarization is provided in an object plane of the imaging system, and the exit state of polarization is measured with pupil resolution within a prescribable pupil range of the imaging system.
3. A method according to Claim 1, wherein a spatially incoherent point light radiation emanating from the object plane of the imaging system is provided as entrance-side radiation.
4. A method according to Claim 1, wherein the evaluation includes a determination of the phase-reduced Jones matrix, and an associated ellipsometric measurement is carried out.

5. A method according to Claim 1, wherein the provision of the defined entrance state of polarization, the measurement of the exit state of polarization and the evaluation include a shearing interferometric measurement or a point-diffraction interferometric measurement.

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6. A method according to Claim 5, wherein the result of the shearing interferometric measurement or of the point-diffraction interferometric measurement is subjected to a downstream polarization analysis.

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7. A method for image correction, wherein the distortion of a pupil image by an optical imaging system of prescribable aperture is determined by at least one of optical computation and measurement acquisition, and is corrected computationally.

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8. An apparatus for determining the influencing of the state of polarization of optical radiation by an optical system under test, having
 - means for providing entrance-side radiation, directed onto the optical system, with a defined entrance state of polarization,

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 - polarization detector means for measuring the exit state of polarization of radiation emerging from the optical system, and
 - an evaluation unit for determining the influencing of the state of polarization by the optical system by means of evaluating the measured exit state of polarization with reference to the entrance state of polarization,

25wherein
 - the polarization detector means are configured to measure the exit state of polarization with pupil resolution, and

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- the evaluation unit is configured to determine the influencing of the state of polarization with pupil resolution.

- 5 9. An apparatus according to Claim 8, wherein the means for providing the entrance-side radiation include a perforated mask in an object plane of the imaging system and upstream first polarization means.
- 10 10. An apparatus according to Claim 9, wherein the first polarization means include a polarizer unit and/or a compensator unit in serial arrangement, which can be set to various spatial orientations.
- 15 11. An apparatus according to Claim 9, wherein the means for providing the entrance-side radiation include a diffusing screen in front of the first polarization means.
- 20 12. An apparatus according to Claim 8, wherein the polarization detector means include a CCD detector and upstream second polarization means.
- 25 13. An apparatus according to Claim 8, wherein the polarization detector means include a shearing interferometer unit or a point-diffraction interferometry unit.
- 30 14. An apparatus according to Claim 8, wherein the evaluation unit is configured for determining the phase-reduced or complete, pupil-resolved Jones matrix.
- 35 15. A polarization analyser arrangement comprising the following elements arranged one after another in the beam path:
- a periodic structure,

- a beam-shaping unit,
 - a compensator polarizer unit, and
 - a polarization analyser element.
- 5 16. The polarization analyser arrangement according to Claim 15, wherein the polarization analyser element comprises a polarization beam splitter element.
- 10 17. A polarization analyser arrangement according to Claim 15, wherein the beam-shaping unit comprises at least one optical element selected from the group consisting of: at least one spherical re-
- 15 fractive lens, at least one aspheric refractive lens, at least one diffractive lens, at least one spherical mirror element, and at least one as-
- pheric mirror element.
- 20 18. A polarization analyser arrangement according to Claim 15, further comprising a detector element coupled to the periodic structure and arranged af-
- ter the polarization analyser element, wherein the periodic structure moves laterally with the detec-
- 25 tor element.
- 30 19. A polarization analyser arrangement according to Claim 15, further comprising a detector element coupled to the periodic structure and arranged af-
- ter the polarization analyser element, wherein the periodic structure moves laterally relative to the
- detector element.
- 35 20. A polarization analyser arrangement according to Claim 15, configured as a polarization detector means on the image side of an optical imaging sys-
- tem to be tested.

21. A polarization analyser arrangement according to Claim 15, configured as a polarization preparation means on the object side of an optical imaging system to be tested.
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22. A polarization analyser arrangement comprising the following elements arranged one behind another in the beam path:
- a beam-shaping unit,
 - 10 - a compensator polarizer unit which comprises a plurality of compensator elements which are fixedly arranged with directions of polarization rotated relative to one another, and
 - a polarization analyser element.
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23. The polarization analyser arrangement according to Claim 22, wherein the polarization analyser element comprises a polarization beam splitter element.
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24. A polarization analyser arrangement according to Claim 22, wherein the beam-shaping unit comprises at least one optical element selected from the group consisting of: at least one spherical re-
- 25 -fractive lens, at least one aspheric refractive lens, at least one diffractive lens, at least one spherical mirror element, and at least one aspheric mirror element.
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25. A polarization analyser arrangement according to Claim 22, configured as a polarization detector means on the image side of an optical imaging system to be tested.
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26. A polarization analyser arrangement according to Claim 22, configured as a polarization preparation

means on the object side of an optical imaging system to be tested.

27. A test apparatus comprising:
- 5 - a source of entrance-side radiation, directed onto an optical system, with a defined entrance state of polarization,
 - a polarization detector configured to measure the exit state of polarization of radiation
10 emerging from the optical system with pupil resolution, and
 - an evaluation unit configured to evaluate the measured exit state of polarization with ref-
15 erence to the entrance state of polarization with pupil resolution.